

EDEBOHLS (Geo. M.)

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A DIAGNOSTIC STUDY

BY

GEORGE M. EDEBOHLS, A.M., M.D.

GYNÉCOLOGIST TO ST. FRANCIS HOSPITAL, NEW YORK

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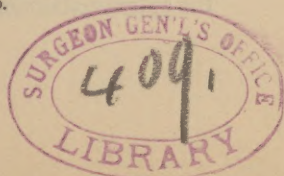
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FOR the past two years I have systematically practised exploratory puncture as an aid in the diagnosis of those diseases of the female pelvic organs which are attended with comparatively slight increase in size of the parts involved. In these cases we are but too often forced to content ourselves with the diagnosis of a "mass," to the right or left of, anterior or posterior to, the uterus. This diagnosis of a "mass" is thoroughly unscientific and unworthy of progressive gynecology, which demands that it shall become less and less frequent. For my own part, I confess that I have never made it, or announced it, without a feeling of humiliation at not being able to do better.

It was this feeling of humiliation and discontent which led to the attempt, at first in isolated instances, to reach

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a more definite diagnosis by exploratory puncture of the "mass." Subsequently, encouraged by one or two gratifying results, I elaborated a technique or method of exploratory puncture which I have since systematically practised in all cases where, without it, a positive diagnosis could not be reached. While it has often failed to throw any further light upon the case, it has nearly as often been of signal service in elucidating the diagnosis. It has determined me to the performance of laparotomy where, without it, I could not have made up my mind to the necessity of the operation. On the other hand, it has led me to decline operative interference in cases where, without the knowledge conveyed by it, I, in common with most of my brother gynecologists, would have recognized clearly the indications for abdominal section. In other words, it has in a number of instances served to give greater precision to the indications for and against laparotomy.

Scope of the Paper.—This paper, let it be distinctly understood from the outset, does not embrace the subject of the diagnosis of the larger tumors of the abdomen, whether originating from the pelvic or abdominal organs. It concerns itself *solely* with the differential diagnosis of slight enlargements, or "masses," which are either situated entirely within the pelvis proper, or, originating there, project but slightly above the brim of the true pelvis into the abdomen, and which are clearly recognizable only by combined abdominal and vaginal touch.

Methods of Exploratory Puncture.—Before proceeding to describe my own method of exploratory puncture, I should like to be permitted a few words and a few criticisms upon the various methods in common use. These methods may be classified as : 1. Abdominal exploratory puncture. 2. Vaginal exploratory puncture. 3. Rectal exploratory puncture.

To abdominal exploratory puncture there can be no valid objection when the diseased mass lies close up against the anterior abdominal wall. But this condition is quite

exceptional. I have only met it three or four times within the past two years in the class of cases we are at present considering. When a small mass lies at some depth in the pelvis, say to one side or other of the uterine cornua, and is perhaps movable, it will be a lucky thrust which will succeed in landing the point of the needle safely in its centre. In such instances there is no certainty and accuracy in the method as ordinarily practised, and it cannot be relied upon.

This same objection, together with some others, applies also to puncture made from the vagina. The vaginal method should be limited entirely to puncture of effusions or tumors distending Douglas' sac, or bulging well into the vagina, if situated laterally or anteriorly. It is practised with or without the use of the speculum. Let us take, again, the instance of a small "mass" situated high up alongside of the uterine body. If the speculum be used, the instrument will be in the way of the palpating finger, and generally prevent it from exactly locating the "mass" just previous to puncture of the latter. Without such a palpating finger for a guide, everyone of us knows how uncertain it is in what direction, or into what, we plunge our needle. Without the speculum the lesion can be better located; it is absolutely necessary, however, to retain the examining finger as a guide to the needle while puncture is being made. The presence of this finger and the absence of the speculum interfere greatly with the free and proper use of the needle.

Of the two methods of performing vaginal puncture the one dispensing with the use of the speculum is, for the class of cases we are considering, probably the better. With the speculum, be it Sims, bivalve, or cylindrical, except in cases where the tumor bulges into the vagina, you cannot be certain of really puncturing it. Without the speculum there is greater certainty of really accomplishing the puncture, but the movements of needle and syringe are greatly hampered. With both, perfect asepsis—and sufficient stress cannot be laid on this point—

although not impossible, is difficult to secure, and always more or less doubtful.

In common with nearly all gynecologists I have practised vaginal puncture for many years, and still employ it in suitable cases as above indicated. These cases are, however, excluded from consideration here, as not coming properly within the limits of this paper.

Rectal exploratory puncture I would discard altogether, or limit to cases of disease of that viscus. Except in instances of neoplasms or exudates occupying the post-rectal region, I cannot conceive of the case in which vaginal puncture would not yield the same information which might be obtained by rectal puncture. I have never practised rectal puncture.

Abdominal Puncture Guided by Combined Vaginal and Rectal Touch.—I will now attempt to describe the method of exploratory puncture of the female pelvic organs as I systematically practise it. The patient is placed upon the examining-table, with the pelvis elevated or not, as may seem indicated in the particular case. The bladder should always be empty. A careful and thorough bimanual examination precedes the puncture in every instance.

This examination I am in the habit of making by passing the index-finger of the left hand into the vagina and the middle finger of the same hand into the rectum. The diseased structures are palpated between these two fingers and the fingers of the right hand placed upon the abdomen. More positive information can be gained in this way than by the combined abdominal and vaginal touch alone. The perineum can be carried upward, to an average extent of about an inch, upon the web or bridge between the rectal and vaginal fingers, enabling the finger in the rectum to palpate the entire posterior surface of a normal-sized uterus, and to reach well up into the region of the tubes and ovaries.

The examiner must feel satisfied that he has gained all the information that a thorough examination can be made

to yield. If this is impossible without an anæsthetic, then chloroform is administered. I have never administered an anæsthetic for the sole purpose of avoiding the pain of the puncture. This is comparatively slight, and generally borne without great complaint by patients, the prick of the needle as it penetrates the skin being the most painful thing about it.

If the results of the examination, be it with or without anæsthesia, are sufficient to establish a positive diagnosis in the examiner's mind, the exploratory puncture is omitted. If, however, as is often the case, a "mass" is the only thing that can be positively diagnosed; or even if, a better diagnosis being attained, tormenting doubts still assail the examiner's mind, then exploratory puncture is superadded and performed in the following manner: The skin of the lower part of the abdomen is thoroughly disinfected, with as great care as if laparotomy were contemplated. The index-finger of the left hand is carried into the vagina and the middle finger of the same hand into the rectum; or, instead of the index-finger the thumb may be passed into the vagina, and the index-finger into the rectum. I have generally preferred the former arrangement.

The ovary, tube, small tumor, or "mass" to be punctured is located by the fingers. The rectal finger, if possible, reaches around behind to the upper limits of the "mass," the vaginal finger being applied to its lower pole. The "mass," thus fixed and balanced between the fingertips, is carried forward as far as can be done with safety toward the anterior abdominal wall.

By combined palpation a point on the anterior abdominal wall, directly over the centre of the "mass" to be punctured, is located by the carefully disinfected fingers of the right hand. At this point, wherever it may happen to be, the sterilized needle is carried perpendicularly through the abdominal wall, and all intervening tissues and organs, into the centre of the "mass."

The fingers in the vagina and rectum fix the diseased

structures, control the course of the needle, and guide it into that part of the mass we desire to puncture. An assistant draws the piston, while the operator's right hand firmly grasps the barrel of the syringe, thus steadying it and the needle. This immobility of the needle and perfect asepsis are the essentials which, to my mind, guarantee the innocuousness of the procedure. Should the aspiration prove negative I never dally with the temptation to move the point of the needle forward and backward, or to advance it in a slightly different direction, but promptly withdraw it, and, if for any reason considered advisable, make an entirely new puncture.

A negative aspiration will leave the diagnosis in doubt; the withdrawal of fluid will, however, give it very great precision. In conjunction with the results of careful bimanual examination it will frequently enable us to make a very positive diagnosis, and indicate very clearly the treatment to be pursued.

I do not think I am overstating the case when I claim for this method of exploratory puncture, as compared with vaginal puncture, or with abdominal puncture as usually practised, the same superiority that is universally conceded to the method of bimanual palpation as compared with either the vaginal touch or the abdominal touch singly. It enables us to feel almost absolutely sure that we have actually punctured the diseased "mass." It is true that the "mass," though small, may be composed of various organs; may be in part fluid, in part solid. In the latter case the needle may enter the solid part, and exploratory puncture give negative results, as will be illustrated further on by one or two examples. Errors arising from such and other causes pertain to the other methods of exploratory puncture even in a greater degree, and will continue to perplex us pending the further perfection of physical diagnosis. Indeed it is as an attempted step in the direction of the latter that I would have my humble efforts here recorded considered and judged.

The Armamentarium necessary for the practice of the

procedure deserves a moment's attention. It is self-evident that too coarse a needle cannot be employed with safety. On the other hand, a needle of too fine a calibre will not permit of the passage of thick fluid, and will become clogged too readily. In my investigations I have used two needles, both being of the same calibre, No. 15 steel wire gauge, though varying in length, one measures two inches, the other two and three-quarter inches from shoulder to point. The former is used to puncture the more superficial, the latter the more deeply seated "masses." I have never had occasion for a needle longer than two and three-quarter inches, although, in case of excessive fatness of the abdominal walls, the necessity for a longer needle might arise. The risk of breakage, of course, in needles of the same calibre, increases with the length; hence my preference for a needle as short as consistent with the purpose to be accomplished. Whatever, however, individual preferences may be as to length, I cannot insist too strongly that the diameter of the exploring needle shall not exceed No. 15 steel wire gauge. The syringe itself should not be too heavy and clumsy; the piston should work easily, smoothly, and evenly. The capacity of the syringe I employ is two drachms.

The Question of Danger.—Gynecologists have, as a general rule, failed to avail themselves of whatever advantage is afforded by pelvic exploratory puncture through an exaggerated dread of the danger involved in the procedure. Part of this dread is, no doubt, the outcome of the dire results that have been recorded as following tapping of abdominal tumors, especially of ovarian cysts. But it will not do to lose sight of the vast difference between puncture with and without full antiseptic precautions; between tapping with a good-sized trocar and making a puncture with a fine exploring needle. The wound made by the latter in passing through any tissue or organ immediately closes upon the withdrawal of the needle. I have repeatedly had occasion to satisfy myself at laparotomies performed immediately, as well as

at varying intervals of one to fourteen days after exploratory puncture, that my needle had gone through one or more loops of gut, or through the omentum, or through both, on its way to the tumor. No ill results followed in these cases, nor indeed in any of the more than seventy cases in which I have practised the method.

Safety, as I have before stated, depends chiefly upon two factors. The first of these is perfect asepsis; the second, immobility of the needle after the point has reached its destination and while suction is being made. By attention to the latter point we avoid tearing the organs and tissues through which the needle has passed, and thus enlarging to a dangerous extent the track of the puncture.

Some of the advantages that I have derived from exploratory puncture, as thus practised, will, perhaps, be best made obvious by the recital of a few pertinent cases. This, too, will enable each one to form an individual opinion as to the value of the method.

Suppurative Inflammation of Tubes and Ovaries.— Since January, 1889, I have removed the appendages on one or both sides, for pyosalpinx and ovarian abscess, singly or combined, in fourteen women. In all but one of these cases the diagnosis of purulent disease of the appendages was positively made before operation by exploratory puncture. In addition to these thirteen cases I diagnosticated, by the same method, pyosalpinx in several other patients who, however, declined operation.

I was able to tell all these patients, after proving the presence of pus, that they carried an abscess or collection of matter within their pelves; to state to them the dangers of this condition, and to declare, with the positiveness of full conviction, that I knew of no way of curing them except by operation. From this last general statement I must, however, except one case of double pyosalpinx in which both enlarged tubes ran outward in a straight line from the cornua of the uterus and were pervious at their uterine ends. In this case I attempted

and succeeded in obtaining a cure by drainage through the uterus. In the cases in which I performed salpingo-oöphorectomy I was in a position—and the advantage of this every abdominal surgeon will be able to appreciate—to approach the operating-table with a serenity of mind and conscience based upon the positive conviction that there was no alternative, but that, as far as our present knowledge went, the operation was an absolute necessity.

In the fourteenth case I failed to find pus, although I could distinctly palpate greatly enlarged tubes, and, moreover, could feel sure that my needle had penetrated into the substance of a tubal convolution at its thickest part. I will give this case in detail.

CASE I. *Double Pyosalpinx ; Failure to obtain Pus by Exploratory Puncture.*—B. S—, aged twenty-two, married, never pregnant, came to me September 22, 1889, with a history of pains, lancinating and intermittent in character, in both inguinal regions, but especially severe on the right side, for three years past. Pain on sexual intercourse ; no leucorrhœa ; no hemorrhage.

Examination.—Uterus, tubes, and ovaries matted together into an irregular, tender mass, pretty well filling the pelvis. The outlines of the enlarged convoluted tubes can be traced running over the surface of the mass.

Exploratory puncture of a convolution of the left tube with negative results. The severity of the symptoms, however, and the futility of prolonged previous treatment, called for laparotomy, which was performed on September 30, 1889.

The uterus, both tubes and ovaries were found fused into one mass. Right tube one inch and left tube three-fourths inch in diameter ; both with enormously hypertrophied walls, the lumen being scarcely enlarged above the normal. These conditions are well shown in the specimen before you. Both tubes contained pus. Right ovary contained a cyst two inches in diameter. Left ovary was the seat of a small hæmatoma, and of several small cysts. Both ovaries and tubes removed.

The failure to obtain pus on exploratory puncture was explained by the enormously hypertrophied wall and the very small calibre of the punctured tube.

The Question of Differential Diagnosis between Pyosalpinx and Ovarian Abscess.—Let us analyze somewhat more closely, for purposes of study, the thirteen cases in which the diagnosis of purulent inflammation of the appendages was made by exploratory puncture and confirmed by subsequent abdominal section. Of the thirteen, 6 were cases of double pyosalpinx with normal or nearly normal ovaries; 3 were cases of pyosalpinx and ovarian abscess of the right side, the left appendages being normal; 3 were cases of double pyosalpinx with abscess of one ovary; 1 was a case of abscess of the right ovary, with normal tubes and left ovary.

Of the 6 cases of double pyosalpinx I was able in 5 to make a positive diagnosis of the exact location of the pus; in 2 of the 5 I succeeded in doing so at the first examination. After mapping out carefully, by bimanual examination, the sausage-shaped contour of the enlarged tubes—which, when it can be distinctly made out, is, as we all know, exceedingly characteristic—I balanced the larger of the two tubes upon the rectal and vaginal fingers, thrust the exploring needle into its thickest part, and obtained pus.

In three cases the diseased organs formed with the exudate in the pelvis a perfectly indistinguishable “mass,” utterly impossible at the first examination of separation into its component parts by the sense of touch. But a few days or a week of rest in bed, with hot vaginal douches, caused the peritubal, periovarian, and periuterine exudations to disappear. Then the enlarged tubes could be readily detected and punctured and a positive diagnosis of pyosalpinx was made.

In the sixth case I could not feel certain where I drew my pus from.

CASE II. Double Pyosalpinx; Rupture of Left Pyosalpinx, followed by Purulent Septic Peritonitis and Second-

ary Perforation of Sigmoid Flexure.—A. P——, aged thirty-one, widow, no children. Had a miscarriage six years ago, since which time she has never been entirely well, although free from great suffering. On July 22, 1889 she fell down stairs. The fall was followed by symptoms of collapse and by severe abdominal pains which have kept her in bed ever since. Two or three days after the accident she noticed a protrusion from the vulva which would recede only on the application of great manual pressure. Fever, chilly sensations, painful micturition, and an offensive, thick, yellowish vaginal discharge were the other symptoms.

On admission, August 12, 1889, the patient was in a profoundly septic condition. During the five days following the temperature varied between $101\frac{1}{2}^{\circ}$ and $103\frac{1}{2}^{\circ}$ F.; pulse 110 to 130, small and feeble. Abdomen distended and sensitive to pressure over its lower half. On the right side an enlarged tube can be fairly well made out.

The region to the left of the uterus is occupied by a softish mass extending upward for two inches into the abdominal cavity. Exploratory puncture into this mass gives pus. Not being able to differentiate the component parts of the mass, I was unable to say positively from what organ or tissue the pus was derived. The clear history and signs of pelvic peritonitis, however, rendered it more than probable that a peritoneal abscess had been punctured.

Laparotomy, August 17th. Recent purulent peritonitis gluing together the abdominal and pelvic organs in a promiscuous fashion. The needle must have passed through several coils of intestine fastened by adhesions across the line of puncture. Large pus tubes, with thick walls, on either side. On the left side a peritoneal abscess containing about two hundred and fifty grammes of fetid pus. This abscess was probably punctured by the needle. It communicated by an opening one and one-half centimetre in diameter with the left pyosalpinx, by a second, somewhat

smaller, opening with the upper part of the sigmoid flexure.

In the light of all the information procurable the case was interpreted as follows: The patient had probably for some years past had double pyosalpinx, not giving rise to marked symptoms. The fall caused a rupture of the left tube, followed by acute suppurative pelviperitonitis. The protrusion from the vagina noticed by the patient a few days after the fall was probably the distended cul-de-sac of Douglas. A peritoneal abscess formed, which perforated the sigmoid flexure.

CASE III. *Double Pyosalpinx*.—This case came twice under my care—in May, 1889, and again in December, 1889. I declined to perform laparotomy on the first occasion, although the patient had come to me with a view to operation. Eight months later I removed her ovaries and tubes. The reasons for my course will appear in the history of the case.

M. H——, aged twenty-two, single. Patient first came under my care in May, 1889, suffering from atypical uterine hemorrhages and pelvic pain. Examination reveals endometritis corporis et cervicis. Uterus slightly enlarged and perpendicular in body; freely movable. Left ovary in normal position, but enlarged to nearly thrice the normal size; right ovary normal. Either tube slightly thickened. Exploratory puncture into left ovary with negative results.

Patient was sent to me for removal of the appendages. This I declined to do for the present, and, after thorough curetting, sent her back to her medical adviser to await further developments.

Eight months later, in December, 1889, the patient returned to me. Her symptoms had continued pretty much the same. I now made out decidedly enlarged and convoluted tubes on either side of the uterus. Both ovaries appeared normal. Exploratory puncture of left tube gives pus.

Laparotomy, January 18, 1890. Moderate adhesions.

Left tube one-half inch in diameter; right tube as thick as an ordinary lead-pencil. Both contained pus. Ovaries normal. Both ovaries and tubes removed.

Patient subsequently confessed to me that her illness dated from a gonorrhœa. I thus had an opportunity to observe the gradual progress of the disease upward, invading successively the mucous membrane of the cervix, corpus, and Fallopian tubes, and resulting in double pyosalpinx.

Tubo-ovarian Abscess.—In one of the three cases of pyosalpinx and ovarian abscess of the right side, with normal or nearly normal left appendages, I was able to differentiate between ovary and tube, and to puncture the latter. In the other two I was unable to determine whether I drew the pus from the ovarian abscess or from the pyosalpinx. I subjoin notes of these two cases.

CASE IV. Puerperal Septicæmia; Tubo-ovarian Abscess of Right Side.—A. W——, aged twenty seven, widow, was delivered of her first and only child on March 25, 1890, in a lying-in asylum of this city. The labor was difficult, necessitating the use of chloroform. She does not know whether instruments were employed.

Patient was admitted to St. Francis Hospital on April 10, 1890, suffering from well-marked puerperal septicæmia. Temperature, $103\frac{1}{2}^{\circ}$ F. Perineum and cervix extensively lacerated. Uterus three and a half inches deep, normal in position, but limited in mobility by a large mass to its right, reaching well up into the abdominal cavity. This mass can be best felt from anterior surface of abdomen, being just beyond comfortable reach from the vagina. It is irregular, somewhat cubical in outline, three by four inches in size, its most prominent point being situated just above the level of the anterior superior spine of the ilium, and two inches within it. An exploratory puncture at this point gives thick, creamy pus at a depth of two inches from the surface. The mass was situated so high up that it might easily have been taken for a perityphlitic abscess. Not being able to differentiate tube and ovary, I could

not tell from which of these organs the pus was derived.

Laparotomy, April 25th, in the presence of Professor Howard A. Kelly, of Baltimore, and Dr. H. J. Boldt, showed the tumor to be a large pyosalpinx and ovarian abscess of the right side. The appendix vermiformis was intimately adherent to its posterior surface, from which it was separated by the fingers. The thickened right tube, containing pus, coursed along the anterior aspect of the tumor. Right tube and ovary removed. Left appendages, presenting nothing abnormal, were allowed to remain. So fused was the entire mass with the right side of the uterus that it was impossible to make out a line of demarcation, and a portion of the uterine wall was removed with the diseased parts.

CASE V. *Right Tubo-ovarian Abscess*.—M. M——, aged twenty-two, married, no children, one miscarriage, was admitted to St. Francis Hospital, June 23, 1890. Up to her marriage, at nineteen years of age, she had been well. Shortly after marriage leucorrhœa began, and has continued ever since. Her husband had gonorrhœa in early married life. A miscarriage two years ago was followed by severe pains of a bearing-down character, and by pain and bleeding at each sexual act. Since her miscarriage has had an attack, similar to the present, about once every three months. Present attack began on June 18, 1890, with severe pains in lower abdomen, distressing bearing-down feelings, vomiting, fever, and tympanites. On admission she presented all these symptoms and was in a septic condition. Temperature, $103\frac{1}{2}^{\circ}$ F.

On the following day examination under chloroform on account of the unbearable pain. Uterus normal in size, but crowded forward by a tumor reaching around behind it from one side to the other. The tumor was six inches long, three inches in diameter, and irregular in outline. Impossible to locate tubes or ovaries on either side. Exploratory puncture over the fundus uteri into the mass behind it proved negative. A second puncture, on the

right side, one and a half inch above Poupart's ligament, yields pus. Exact derivation of pus uncertain.

Laparotomy, June 27th. Awful matting together of viscera. The omentum and small intestine, adherent over the front of the tumor, had been punctured by the needle. The right tube formed a pus-sac three and a half by one and a half inches in size. Behind it and the uterus, and adherent to both, was an abscess of the right ovary even larger than the pyosalpinx. After their removal no further induration could be felt in the pelvis. The left tube and ovary were buried behind adherent viscera, and, not being palpably enlarged, were left. I was unable to determine at the time of operation whether I had punctured the pyosalpinx or the ovarian abscess.

Of the three cases of double pyosalpinx with ovarian abscess of one side the pyosalpinx alone was diagnosticated in one case, the ovarian abscess not being detected until operation. In the other two cases the enlarged tubes were plainly mapped out by bimanual examination, and, in addition thereto, an enlargement and fixation of one ovary were recognized. Puncture was made into the latter and pus obtained. Puncture of the tube was not superadded, and a positive diagnosis of the pyosalpinx was not made in these cases, the presence of the ovarian abscess being held sufficient to indicate laparotomy, on the occasion of which the tubes would naturally be examined.

In both instances the diagnosis of ovarian abscess proved correct ; curiously enough, however, the abscesses which had been diagnosticated as involving the left ovary were really situated in the right. The latter had prolapsed to the left side, and had become firmly attached there by inflammatory adhesions. I omit the histories of these three cases, as presenting nothing of interest beyond what I have just indicated.

The most recent case of tubo-ovarian abscess upon which I operated possesses features of collateral interest in connection with the subject of exploratory puncture.

CASE VI. *Right Tubo-ovarian Abscess ; Stenosis of the Aortic Orifice.*—M. C——, aged nineteen years, had been perfectly well up to the date of her marriage, two years ago. Since then she has suffered more or less from pelvic symptoms, the most prominent of which were leucorrhœa and pain on defecation.

Examination, October 4, 1890. Patient has a well-marked stenosis of the aortic orifice, as indicated by a harsh, systolic bruit, loudest at the base of the heart over the aortic valves. The pelvic organs being exceedingly tender, chloroform was very carefully administered, with a view to a thorough pelvic exploration. The uterus, normal in size and anteverted, is pushed slightly to left and forward by a small mass occupying its latero-posterior aspect on the right side. This mass is formed of the right tube and ovary, is about the size of corpus uteri, and on exploratory puncture is found to contain pus.

At this stage of the examination patient became deeply cyanosed and stopped breathing. The anæsthetic had already been withdrawn, and restorative measures were at once applied. After several moments of anxious suspense the patient resumed breathing and the cyanosis gradually disappeared. It was felt, however, that she had had a narrow escape.

On the following day I informed the patient of the fact that she was a sufferer from organic cardiac disease, and of the incident connected with the examination under anæsthesia. I imparted to her my diagnosis of her case, and that I knew of no way of curing her except by operation. The latter, however, I was not very anxious to undertake, owing to the necessity of anæsthesia. I informed her frankly that, in addition to the ordinary dangers of the operation itself, she would run the risk of death on the table from heart disease. After a full day's consideration of the matter she declared, much against my expectations, that she was willing to take all risks, and requested me to perform the operation. Had I not been absolutely certain, beyond all peradventure, of my diagnosis of tubo-ovarian

abscess—a certainty based upon the results of exploratory puncture—I would have refused to operate, at least for the present, under any circumstances.

The ovarian abscess and pyosalpinx herewith presented for your inspection were removed by laparotomy October 7, 1890. Ether was used as an anæsthetic, I need scarcely add in scant amount, and the operation was completed without accident.

Recovery was interrupted by an attack of acute pericarditis, which caused me considerable anxiety from the fourth to the ninth day, when it subsided. Since then progress toward convalescence has been disturbed only by an attack of acute general urticaria and the patient is now out of danger.

Ovarian Abscess.—I will report in detail a case of abscess of the right ovary, with normal right tube and left appendages. It is of interest because the palpable changes in the pelvis were so slight, almost indiscernible, that without the results of explorative puncture to indicate it I should not have considered laparotomy justifiable, and should have most emphatically refused to perform the operation.

CASE VII. Small Abscess of Right Ovary, with Tubes and Left Ovary Normal.—A. K—, aged thirty, married, one child; was admitted to St. Francis Hospital, May 10, 1889. Patient's history dates back two years, and began with a sudden sharp pain in right hip and right lower abdomen. Since then menstruation, before painless, has been very painful, although regular and otherwise unchanged. For six months past, bearing-down pains, burning sensation over hip, and shooting pains in right side, decidedly increased by motion. No leucorrhœa.

Examination under chloroform, patient being quite fleshy. Slight endometritis and hyperplasia of cervix and corpus. Left appendages and right tube normal. On right side, high up as the fingers can reach from vagina and rectum, above pelvic brim, an induration about one and a half inch in diameter can be made out, immovably

attached to the posterior abdominal parietes. Exploratory puncture of this induration gives pus. Diagnosis, ovarian abscess of right side.

Laparotomy, May 30, 1889. Both tubes and left ovary perfectly normal. Right ovary embedded in multi-form adhesions to all surrounding viscera. After exposing the ovary an attempt was made to separate it by tearing its posterior adhesions. In doing so, it ruptured and discharged its entire contents, not quite two drachms of pus, into the abdominal cavity. The diseased ovary was removed with the right tube. Left tube and ovary were not disturbed. The appendix vermiformis was found filled with a row of dense fecal concretions, tied off and removed. I herewith present the specimen, which will enable you to judge of the small size of the abscess.

As I have already stated, if the exploratory puncture had failed, which it luckily did not, to discover pus, I should have declined to operate, and thus have failed to restore to health and happiness a patient, when, as the result proved, it lay in my power so to do. I have, however, never as yet removed the ovaries or tubes, except for gross palpable lesions of these organs or in cases of uterine myoma. I have not, as yet, met the case in which I considered the removal of normal ovaries for the relief of nervous symptoms indicated or justifiable.

Hæmatosalpinx.—Leaving now the subject of suppurative disease of the appendages, I desire to call attention to some cases, not, however, verified by operation, in which a diagnosis of hæmatosalpinx was made by the aid of exploratory puncture, as well as to one case where a hæmatosalpinx was found at operation, although I had failed by exploratory puncture to diagnosticate its presence. This subject of the differential diagnosis between hæmato-hydro- and pyo-salpinx is of peculiar interest, as, except by the aid of exploratory puncture I know of no way in which it can with any degree of certainty be made. In fact, the diagnosis of hæmatosalpinx is considered impracticable by most gynecologists.

CASE VIII. *Hæmatosalpinx (Tubal Pregnancy?) of Right Side*.—C. A——, aged twenty-two, married, no children, one miscarriage in May, 1889, came under my care January 14, 1890. Her previous history is unimportant. Has always been perfectly regular in her periods, flowing four days every four weeks, until November 8, 1889, when she menstruated regularly for the last time. Her periods did not appear when due in December, but two weeks later, December 22d, a flow came on which lasted until I first saw her. During the first week of this three weeks' flow there was considerable vomiting. During the entire period of three weeks, pain in abdomen, from umbilicus down, very severe at times and radiating down both thighs, was the chief and almost constant symptom. The pains were of a pressing and bearing-down character. The patient is unaware of the passage of anything but fluid blood from the vagina.

Uterus normal in size; cervix soft and slightly patulous; fundus deflected slightly to left. To right of uterus, high up in pelvis, an oblong, distinctly outlined tumor, three by two inches, with its long axis parallel to Poupert's ligament, can be readily made out. Left appendages normal. Right ovary, of normal size, can be felt in Douglas' sac. Right tube the seat of the swelling. Exploratory puncture of the latter yields a syringeful of bloody serum. *Hæmatosalpinx*, or pregnancy of the right tube, probably the latter, diagnosticated.

No particular treatment was urged for the present, as the removal of the serum from the gestation sac was considered sufficient to insure destruction of the foetus, if the case were one of tubal pregnancy. If a case of *hæmatosalpinx* simply, laparotomy was not indicated.

Patient improved rapidly, went to Europe a month later, and at last report, September, 1890, had experienced no further symptoms. It will perhaps be conceded that the indications for laparotomy in the above case would have been considered sufficient by nearly all gynecologists, and imperative by many, and that the result of

the exploratory puncture was the only thing that saved the patient from what proved to be an unnecessary operation.

I have on two other occasions, during the past eighteen months, made the diagnosis of hæmatosalpinx, based upon the finding, on bimanual examination, of an enlarged tube on one side, both ovaries and the other tube being normal, and the determination by exploratory puncture that the enlarged tube contained bloody serum. Unlike Case VII., however, there was in these cases no history pointing to a probable extra-uterine gestation. As the symptoms in neither case were urgent, non-interference and waiting were advised. Unfortunately neither of these patients returned after the first visit, and I was unable to ascertain what became of them.

In the following case a misinterpretation of the results of exploratory puncture led to a mistake in diagnosis, and to an unnecessary laparotomy, or, at least, to one which I should not have performed had I interpreted the findings correctly.

CASE IX. *Left Hæmatosalpinx*.—G. S——, aged twenty, single, was well up to May 22, 1890. On that day she took a bath while unwell. The flow lasted three days longer than usual, and she experienced abdominal pains, which, together with pain on micturition, have persisted to date.

June 11, 1890. Uterus normal in size and position, but impeded in its movements by a slight exudation all around. On the left an enlarged tube can be felt prolapsed into Douglas' sac. Exploratory puncture over the top of fundus uteri, into the swelling occupying the posterior cul-de-sac, gave negative results. A second puncture, more to the right, brought two or three drops of bloody serum. This was supposed, erroneously as it proved afterward, to have been derived from the peritoneal cavity.

Laparotomy, June 24, 1890. Recent serous peritonitis, with slight adhesions of pelvic viscera to each other

and to intestines. A half pint of yellowish serum in the peritoneal cavity. Lying behind the uterus, in Douglas' sac, was a hæmatosalpinx of outer part of left tube two and one-half inches long by one and one-half inch wide. Both ovaries and the right tube normal. The hæmatosalpinx ruptured on manipulation and discharged its contents, bloody serum, identical with that obtained on exploratory puncture. After rupture and evacuation of its contents the tube collapsed to about its normal size; the lips of the tear became nicely approximated. The abdomen was closed without removing anything except the yellowish peritonitic serum. The patient made an uninterrupted recovery and remained well.

Extra-uterine Pregnancy.—In the following recent case a diagnosis of tubal pregnancy, with rupture, was quite positively made at the first examination, and very materially by the aid of exploratory puncture.

CASE X. Tubal Pregnancy of Right Side; Rupture; Tubal Abortion; Intraperitoneal Hemorrhage.—On October 11, 1890, I was asked by Dr. George F. Carey to see, with him, at her home, Mrs. M. Y——, married, twenty-six years of age. In March, 1885, she gave birth to her only child. Has always been perfectly regular in her periods, flowing seven days every four weeks, until August 8, 1890, on which day her last regular period began. Her next period was due September 5th. She lost no blood, however, until September 10th, from which date until the present she has flown constantly. Crampy pains referred to the pit of the stomach and both iliac regions, and vomiting, at first in the morning, later on at all times of the day, were the other symptoms. Dr. Carey had discovered a swelling to the right of, and posterior to, the uterus, semi-elastic in consistency, and painful on pressure, which he strongly suspected to be due to an extra-uterine gestation. I verified the conditions above described. The uterus, of normal size, was crowded forward and to the left by the tumor situated to its right and posteriorly. I coincided with the diagnosis of tubal

pregnancy of the right side, and with the kind consent of Dr. Carey, made an attempt to obtain further information by exploratory puncture. The needle entered the mass, and aspiration proved negative. While slowly withdrawing the needle, however, the vacuum in the barrel being maintained, and just as the point of the needle left the mass and became free in the peritoneal cavity, the syringe filled with thin, dark blood. An intraperitoneal hemorrhage, due to ruptured tubal pregnancy, was diagnosed. No symptoms of active hemorrhage being present at the time, the patient was transferred to hospital for operation.

Laparotomy, October 13th. Peritoneum contained about a pint of dark fluid blood, of the same character as that withdrawn by exploratory puncture, together with a handful or two of clots. Tumor, formed of a large firm clot, and of enlarged and ruptured right tube, occupied right side of uterus and Douglas' sac. The clot, a cast of the distended right tube, occupied the rent in the tube, and was situated partly in the tube, and partly in the free peritoneal cavity. Outer half of the tube enlarged, dilated, and hypertrophied. Inner circumference of enlarged portion varied between one and three-quarters and two inches; the rupture, about one and one quarter inch long, occupies anterior aspect of junction of middle and outer thirds of tube. Right ovary normal, but undersized. Clot removed. Ruptured tube and right ovary tied off and removed. Blood and clots removed from peritoneal cavity; free flushing of latter. Fœtus not found. Patient recovered without an unpleasant symptom. A microscopical examination of the tube and the clot contained in it, both of which I herewith present, failed to discover chorionic villi. The fœtus had either become absorbed in the peritoneal cavity, or had been washed out with the free fluid blood and clots.

I may be pardoned a few therapeutic considerations, upon which exploratory puncture has a bearing, in connection with this case. When the patient was first seen a tubal pregnancy of the eighth or ninth week, and, by ex-

ploratory puncture, the presence of free blood in the peritoneal cavity, were diagnosticated. There were at the time no indications of active hemorrhage going on. At the operation a pint of fluid blood and a handful or two of clots were found in the peritoneal cavity. The tube had ruptured and expelled the entire ovum into the peritoneum; in other words, tubal abortion had been completed, and the foetus had perished in the abdominal cavity. There was no hemorrhage going on, and the coagulum which had finally closed the blood-vessels of the tube was in the process of extrusion from the latter.

On careful review of the case after operation, I could see no reason why the patient should not have recovered without laparotomy. The original cause of the hemorrhage had ceased to be operative; the fluid blood and clots in the peritoneal cavity would, in all probability, have been absorbed, either directly or after forming a hæmatocele. The ruptured tube would have undergone involution, and a tubo-peritoneal fistula, at most, would have been left to tell the tale of ectopic gestation. Without laparotomy, and with or without electricity, the patient would have gotten well.

The soundness of the recent advice of Olshausen¹ receives confirmation from this case. In cases of extra-uterine pregnancy in the first three months he urges immediate laparotomy (I would venture to substitute electricity, or perhaps simple puncture and aspiration of the amniotic fluid as in Case VIII.) if the case be diagnosticated *before* rupture; *after* rupture laparotomy should be performed only when the symptoms are extreme, and when the surroundings and conditions are such as to guarantee the possibility of an aseptic operation.

Exploratory puncture enabled me, in the above case, to diagnosticate a free intraperitoneal hemorrhage, which, coexisting with the symptoms and signs of a tubal gestation, indicated plainly that rupture had taken place.

¹ Deutsche Medizinische Monatsschrift, 1890, Nos. 8-10.

This fact is of value when we consider that we have no other positive sign of the presence of blood free in the peritoneal cavity.

One or two other practical considerations arise in connection with the case. Was it necessary, when performing laparotomy, to extirpate the recently pregnant, ruptured, and now cleanly empty tube? Could it not, with perfect safety to the patient, have been left to take care of itself, with or without freshening and suture of the rent through which the foetus escaped? I am inclined to answer the latter question in the affirmative. Should I meet again with an identical case, I shall empty the peritoneum of clots and blood, and after assuring myself, by the passage of a probe, of the perviousness of the uterine end of the tube, I shall freshen and sew together the margins of the rent in the tube, drop the latter, and close the abdominal cavity.

Hydrosalpinx or Small Cystoma.—In the following case exploratory puncture led me to diagnose the existence of hydrosalpinx, or of a small cystoma, and, knowing that these conditions sometimes disappear spontaneously, to decline operative interference for the time being. The symptoms were not too urgent, there seemed to be no danger in delay, and the patient could be watched.

CASE XI.—E. W——, aged forty-seven, married, gave birth to eight children, the last in 1879, and miscarried with twins in 1880. Patient was well, and periods were regular, until May 15, 1890. On that day metrorrhagia, with passage of clots, and colicky pains came on, and lasted until she came under my care on June 14th. Frequent and painful micturition accompanied these symptoms. Has not indulged in sexual intercourse for three years past.

Uterus normal in size and position. To its left, and posteriorly, can be felt an elongated mass, half as large again as the uterus itself, irregular in outline, soft, though not fluctuating.

Exploratory puncture yields a syringeful of pale amber-

colored fluid, which froths on pouring into a test-tube, and is decidedly albuminous.

Diagnosis doubtful between small cystoma and hydrosalpinx, the character of the fluid pointing to the former, the shape to the latter.

Small Parovarian Cystoma.—During my experience with exploratory puncture I have encountered two cases of small cystomata of the parovarium. In one the diagnosis of parovarian cystoma was reached as the combined result of careful bimanual examination and of exploratory puncture, and confirmed by abdominal section. This statement embraces all of importance and interest in the case, and I shall therefore not describe it in detail. In the second case the diagnosis was not made, and as it illustrates well a possible source of error, already alluded to in the practice of exploratory puncture, I venture to give the particulars.

CASE XII.—C. M——, aged thirty-six, married, and the mother of seven children, was admitted to St. Francis Hospital, November 7, 1889. She has been under treatment, local and general, for eight years. During the past four years has been a constant sufferer from all sorts of aches and pains, being thereby, although of robust frame, entirely incapacitated for work. Her chief pain has been in the left iliac region. Her last regular period ended October 17, 1889.

Examination, November 10, 1889. Uterus of normal size; cervix extensively lacerated in various directions. A tumor with distinct outlines, and goose egg in size and shape, can be palpated in left ovarian region. Exploratory puncture of tumor with negative results.

After several weeks of general and local treatment, without improvement, laparotomy was performed on December 3, 1889. Fat abdominal walls. Uterus slightly enlarged. Both tubes and right ovary perfectly normal. Left ovary, enlarged to twice its natural size, forms one mass with a small parovarian cyst of the broad ligament. Cyst punctured and fluid evacuated. Nothing removed.

Abdomen closed. In performing exploratory puncture the needle had entered the solid half of the tumor, composed of the ovary, instead of the fluid half, the attached parovarian cystoma.

February 5, 1890. Examination shows patient to be pregnant about three and a half months, and consequently to have been pregnant six weeks at the time of operation. Pregnancy went on undisturbed.

The Appendages in Fibroma Uteri.—Quite recently exploratory puncture decided for me a question of practical therapeutics in a case of uterine fibroma, the choice lying between electricity and salpingo-oöphorectomy.

CASE XIII. *Uterine Fibroid impacted in Pelvis ; Adeno-epithelioma of Tubes and Ovaries.*—E. S——, aged forty-five, single, suffering from uterine fibroma, was sent to me by her family physician with a written request to continue a course of electrical treatment initiated and carried on for several months past, but without effect, by the family physician. A preference for electro-puncture was expressed in the note.

The patient was anæmic and cachectic in appearance, and gave a history of severe suffering for eight months past ; had no abnormal hemorrhages. Her last menstruation occurred July 6, 1890, and was trifling in amount ; she supposed herself to have reached the menopause.

On examination, October 10, 1890, the cervix is found forward of its normal position and low in the vagina. Uterus two and a half inches deep, the sound running anteriorly. A fibroma, a little over three inches in diameter, occupies the posterior wall of cervix and of body of uterus, and is immovably impacted in the pelvis beneath the sacral promontory. Pelvic cavity pretty well filled by uterus and fibroma. Both ovaries can be distinctly felt in about their normal position ; they feel slightly enlarged and hard. Between uterus and left ovary a soft, fusiform enlargement, about twice the size of left ovary, can be felt. Exploratory puncture into this mass yields bloody serum. Right tube slightly thickened. The appendages being

diseased, as evidenced by both bimanual examination and exploratory puncture, electricity was held to be contraindicated and laparotomy called for.

Laparotomy, October 14, 1890. A pint of ascitic fluid in the peritoneal cavity. Both ovaries and tubes the seat of neoplastic changes of a papillomatous appearance. On the right side the growth had infiltrated the peritoneum and subperitoneal tissues of the posterior pelvic wall. In removing it from this region the right ureter was laid bare for over an inch of its length, and alarming hemorrhage ensued. Ovaries and tubes on both sides tied off and removed. Hemorrhage controlled by packing left half of pelvis with iodoform gauze, the fibroma forming an excellent surface for counter-pressure. The fibroma could not be raised out of pelvis and was left unmolested. In the folds of the left broad ligament were three or four small cysts, pigeon-egg in size and shape, and containing bloody serum. One of these had been punctured by the exploring needle. A careful microscopical examination of the growths, kindly made by Dr. Eugene Hodenpyl, showed them to be adeno-epitheliomata. Dr. Hodenpyl believes them to be good examples of malignant disease engrafted upon ordinary cyst-adenoma.

Tuberculosis of Tubes and Peritoneum.—I have practised exploratory puncture in two cases of tuberculosis of both tubes, associated with general tuberculosis of the peritoneum. In one of them exploratory puncture gave absolutely no information; in the other it furnished evidence of a circumstantial nature which proved in some degree contributory to a correct diagnosis.

CASE XIV.—R. S——, aged twenty, single, admitted to St. Francis Hospital, July 8, 1889. Father and three sisters living; mother and one brother died of consumption. Patient dates her illness from April, 1889. Pains in lower part of abdomen the chief complaint. No cough, and but little cachexia or emaciation.

Examination shows both tubes to be decidedly and ir-

regularly enlarged, averaging about the thickness of little finger. Exploratory puncture of both tubes with negative results.

Laparotomy not entertained at first. While under observation the tubal tumors very rapidly increased in size until they were one and a half inch in diameter; there was corresponding increase in pains and irregular fever. Rapidly filling pyosalpinx diagnosticated (without a second exploration by puncture) and rupture feared. Operation now advised. Tuberculosis not suspected.

Laparotomy, July 24, 1890. Tuberculosis, far advanced, of entire peritoneum. Primary tuberculosis of both tubes. No ascites. Abdomen closed without removing anything but a small piece of peritoneum for microscopical examination. The latter demonstrated the presence of the bacillus tuberculosis.

CASE XV.—A. G——, aged thirty, married, mother of seven children, came under my care April 28, 1890. Family history indifferent. Formerly suffered from some uterine displacement for which she wore a pessary. Present illness dates from February, 1890. It began with stabbing pains in right groin, which soon became general all over the abdomen. These pains have kept her in bed for two months past. Appearance that of a person greatly run down in health; anæmic, emaciated, listless, and cachectic. Mild pyrexia.

Abdomen tumid, irregular in outline. Tympanitic resonance on percussion everywhere except low down in right flank. Uterus normal in size and position; mobility impaired. In region of right tube an elongated induration, about two inches long, can be felt. Left tube enlarged to about half this size. Douglas' pouch boggy to feel. Two or three enlarged sacral glands are found in the hollow of sacrum behind rectum. Spleen considerably enlarged and very hard, can be distinctly felt reaching downward to two inches below the costal margin. At various parts of the abdomen a few small nodular masses can be felt behind the thin abdominal walls

and moving with them. Exploratory puncture of tubes negative. Puncture into retro-uterine space on two occasions, May 5th and May 16th, gives yellowish serum. Although especially examined for their presence, no bacilli tuberculosis were found in this fluid. The exploratory puncture, however, revealed the presence of ascitic fluid in the peritoneum before it had accumulated in sufficient quantities to be detected by other signs. The discovery of this fluid, coupled with the general symptoms and the nodular indurations of the parietal peritoneum, led to the diagnosis of tuberculosis of the tubes and peritoneum. This diagnosis was confirmed by laparotomy May 24, 1890.

Small Cystic Degeneration of Tubes and Ovaries.—I have removed the ovaries and tubes once for extensive small cystic degeneration of these organs. In this case exploratory puncture had been performed with negative results and had failed to throw any additional light upon the case.

Malignant Disease.—Quite recently exploratory puncture aided me materially in reaching a diagnosis of malignant disease forming a tumor of small dimensions. The subject is of sufficient general interest, perhaps, to warrant my reporting the case somewhat in detail.

CASE XVI. *Carcinoma of Posterior Wall of Caput Coli, Involving the Appendix Vermiformis and Right Ovary.*—M. S——, aged forty-two, married, gave birth to her only child in 1872. Has not been quite well since November, 1889. Pains in the right groin and in back, and more or less looseness of the bowels have been the main symptoms. States that she has lost considerable flesh, although at present not noticeably emaciated or cachectic in appearance.

September 18, 1890.—Uterus at normal height in pelvis, two and a half inches deep, immovable; fundus turned slightly to right. A hard, oblong tumor, of an average diameter of perhaps three inches, runs from middle of right Poupart's ligament over fundus and anterior surface of corpus uteri to left iliac region. Its right end

is fixed, its left end freely movable in the abdominal cavity. Fundus uteri embedded in and immobilized by this mass. Exploratory puncture at two different points fails to find fluid. The needle, however, in traversing the tumor, gives rise to an exceedingly well-marked creaking sensation, identical with the characteristic creaking produced on cutting through a carcinomatous tumor with the knife. In my entire experience with exploratory puncture, I had never met with anything approaching this sensation. It impressed me as so characteristic that I had no hesitation in pronouncing the tumor malignant, and from the history of the case, as probably connected with some portion of the intestinal tract.

Laparotomy, September 23, 1890, verified the diagnosis. A carcinomatous tumor about two by two and a half inches in size occupied the posterior wall of the caput coli. It involved the appendix vermiformis, the right ovary, and somewhat more than the outer half of the right Fallopian tube. The intestines and omentum were matted together over the mass and around the fundus uteri. The carcinoma had so far involved the neighboring tissues and organs that an attempt to remove it was considered unjustifiable, and the abdomen was closed.

The above are some of my experiences with pelvic exploratory puncture guided by combined vaginal and rectal touch, as I would venture to designate the method. In presenting them, I have only utilized such cases of which I possess full records, and in which either a subsequent laparotomy, or observation of the further progress of the case, furnished data for an estimate of the value of the method. The method has, a number of times in addition, materially aided me in reaching a diagnosis and conclusions in regard to a case satisfactory to my own mind. But as such patients either disappeared from observation, or the diagnosis was not confirmed or disproved by laparotomy, I have not deemed them proper cases for the purposes of this paper.

As to the practical value of the method, each one, after an analysis of the above-recorded observations, will be in a position to reach his own conclusions. I have endeavored to refrain from presenting the favorable aspects of the matter in too strong a light, and have preferred to record more fully, and dwell at greater length upon instances demonstrating the shortcomings and the failures, more or less complete, of the method. I have done this believing that here, as everywhere, more is to be learned from an analytical study of our failures than from a mere rehearsal of our successes.

This much I think I may, in all fairness, claim for the above-described method of pelvic exploratory puncture: It has yielded me information of a very practical character in a number of cases, without ever doing the least harm to any of my patients. Not one of us can afford to disregard any means which will help to throw additional light upon a case, and thus enable him to do better for the patient who has entrusted her health, and often her life, to his hands.

The one consideration, however, from which I derive greater satisfaction than from any other, is that exploratory puncture has, in some of my cases, taken the place of, and rendered unnecessary, an exploratory laparotomy. Laparotomies have become such a daily, common occurrence that there exists the danger of losing sight of the fact that a number of simple exploratory laparotomies have proved fatal. Abdominal section is always a serious matter, and I cannot help being amazed at the flippancy of him who can find in any intrapelvic enlargement, with ever so slight or even no symptoms, the indications for a laparotomy, be it exploratory or otherwise. If the further elaboration of this method, and its trial at the hands of others with larger opportunities, will result in sparing some of their patients, as it has some of mine, the ordeal and risks of exploratory laparotomy I shall feel that my main object in writing this paper has been accomplished.

It must be evident from a perusal of the above that pelvic exploratory puncture, as here delineated, aspires to the dignity of a somewhat exact and scientific procedure. It presupposes not a puncture at random into the pelvis, but an attempt to guide the needle into the exact part to be explored, nay, approximately into any desired portion even of such part. It must be evident also that it is not a procedure to be practised indiscriminately by every one. A *sine quâ non* of its safe and successful employment is the possession of a fair degree of skill and experience in bimanual palpation of the pelvic organs. Perfection in this regard we may never hope to attain. There will always be cases which will baffle the greatest diagnostic acumen. Still I would, as a last injunction, urge that the method be attempted only by those whose tactile sense is sufficiently educated by daily practice to enable them to apply it with the greatest probability of attaining good and of avoiding mischief. Finally, to even such, I would say, as a parting word: Perfect asepsis, immobility of the needle, and resistance of the temptation to bore about in the tissues are the guarantees of safety.

198 SECOND AVENUE.

